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Big Data and Analytics in the Enterprise

An Introduction to Procurement Analytics

Purchases take up a significant slice of business revenue. Analytics provide the opportunity to cut costs, reduce waste and improve operational efficiency.

By Malcolm Wheatley

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Procurement is big business—and produces big data. Manufacturer or bank, government agency or restaurant chain, every organization spends significant amounts of money buying products and services. Raw materials, utilities, office equipment, stationery, and services such as legal advice, advertising, and facilities management. Roll it all together, and the amount is always impressive, equating to a significant percentage of overall revenues.

But what, precisely, is all that money spent on? In the typical organization you'll often struggle to find detailed answers. Hence the growing appreciation of the role played by procurement analytics in shining a spotlight into areas of expenditure that are often murkier than might be desired.

↑ **Procurement analytics** deployed at Tata Steel's mill at Port Talbot, U.K., above, identified overstocks for expensive parts for overhead gantry cranes. Photo: Tata Steel.

"Analytics tools have advanced and improved significantly—but their usage within procurement remains extremely limited, and their purpose isn't clearly understood," says Mickey North Rizza, a former Gartner analyst and vice-president of strategic services at Chicago-based BravoSolution, a supply chain consulting and services provider. "People can struggle to see the value in it."

Yet in the right hands, say insiders, that value is undoubted. For by obtaining a clear picture of what they are spending their money on, the prices they are paying, and the suppliers they are dealing with, organizations can concentrate their spend where it is most effective.

In short, the use of procurement analytics unlocks the opportunity to:

- Reduce costs by consolidating expenditures on fewer providers, thereby exerting greater leverage in purchasing negotiations.
- Avoid wasteful expenditure through over-specification—where materials are ordered to a higher standard or specification than is actually required—and the use of "off-list" non-preferred suppliers.
- Improve buying efficiencies by enforcing compliance with pre-agreed pricing, discount, and volume-based price break structures.

L'Oréal USA Signs Outsourcing Deal with IBM for Procurement Analytics

by Michael Goldberg

Mascara was big for L'Oréal USA in 2012. Mega Plus, the latest addition to the Volum'Express mascara line, sold several million units. Combined with new eye shadow and lipstick product launches in L'Oréal's biggest market, Mega Plus made the French cosmetics giant look good, able to post a 12 percent rise in operating profits on sales of 22.5 billion Euros in a fragile economy.

Rich Ullrich also works to make L'Oréal look good, but as vice president of indirect procurement at New York-based L'Oréal USA, he's concerned with everything that does not relate to the development and manufacture of beauty products—purchases that amount to about 60 percent of the company's overall spending. And while sales representatives at makeup counters explained how the Mega Plus gel-mousse formulation leads to supple eye lashes, Ullrich was working to embark on a three-year procurement analytics deal with IBM.

***Rich Ullrich** of L'Oréal*

The initiative's goal: implement data management and analytics tools, benchmarking studies and improved management practices to cut costs by as much as 12 percent of baseline spending on indirect procurement. Office space. Travel expenses. Consulting services. Marketing and advertising purchases. IT equipment. And more.

L'Oréal is not alone in having a procurement challenge. Enterprises can find it difficult to track purchases, for example, when a company's size or structure changes with a merger or acquisition, when purchasing is distributed in an organization, or when different vendors use different labels

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for the same category of office supplies or services. Applying analytics to expenditures is a long-standing use case.

Through growth and acquisitions, L'Oréal USA has seen its efforts to control procurement practices fragment, Ullrich said. With multiple versions of enterprise applications in place, getting a unified view of nine different sets of procurement data will allow the company to understand spending behavior, prices paid for goods and services and "then apply levers" to get better results.

"This project is really about resource optimization and spending leverage," Ullrich said. "The three things [required] are the right resources, leveraging your spend and utilizing industry-best tools. Those things make for a successful project."

L'Oréal USA and IBM did not disclose terms of their deal which went into effect earlier this year, except to point out that the amount IBM earns in fees will depend on how much money L'Oréal saves. Other issues Ullrich discussed:

- The project will use Emptoris tools to collect, clean, manage and analyze procurement data. An acquisition announced in December 2011, IBM completed its purchase of Emptoris in 2012.
- The outsourcing deal makes sense to L'Oréal USA because it means the cosmetics company avoids having to spend the time to build, recruit and train its own analytics team. At the same time, Ullrich said, L'Oréal can choose to bring the project in-house after three years based on the terms of the licensing deal with IBM.
- Benchmarking is a key element of the project. The ability to compare L'Oréal's procurement data and history to other enterprises is a priority. Such benchmarking allows L'Oréal to examine the pricing for commodities and to assess how L'Oréal can get better deals, he said. The deal with IBM allows L'Oréal to analyze a broad view of many companies' procurement experiences, Ullrich said.
- Eventually, L'Oréal USA plans to connect its procurement analytics with its SAP ERP system.

The issue of strategic sourcing will be a major focus of the L'Oréal USA project, said Bill Schaefer, IBM's vice president, supply chain and procurement services. "Strategic sourcing is the front end of the process. It's about identifying the suppliers who I want to do business with, the bidding and negotiating, and going to contract with them."

Compliance is another element of the project, and another classic issue in procurement, he said. Companies set policies, such as traveling with a preferred airline for pre-negotiated rates, but fail to follow through. Many companies see less than 50 percent compliance, "so they leave tons of money on the table," Schaefer said. "Part of the scope of this project is to help [L'Oréal USA] drive much higher compliance."

He said the project will deploy the Compliance Analytics Tool developed by IBM Research that mines data on millions of day-to-day transactions. "When someone places a purchase order or wants to buy something, [the tool] looks for problem areas, if you order from the wrong supplier or you are not getting the right prices. And it helps pinpoint where the problem areas are and then goes back and addresses it."

Maybe the problem is that employees were not aware of the company's purchasing policies. Or maybe the contract with a vendor needs to change. "The idea behind it is to make sure L'Oréal sees the benefit of all those contracts," he said.

"Many people might not appreciate the compliance issue, but it's a huge issue," said Schaefer, who was a procurement executive at IBM before leading its service offering. "A typical company may be doing millions of transactions. People buying office supplies, and all kinds of things. How are you going to find problems? If you run a standard report, who did I place order with? But you'd have to manually go through that, and then spot suppliers not on your list."

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The Data Forensics Problem with Procurement

In any discussion of procurement analytics, it's necessary to begin with explaining why procurement analytics is necessary in the first place. How come organizations don't simply know what they buy, in the same way that businesses know what they sell, and who they sell it to?

There are several problems, say experts.

One is organizational: in the typical organization, many people and functions hold the purse strings. Consequently, a business's professional buyers—and their buying systems—aren't always involved in sourcing decisions, and don't always capture spending data.

Legal advice, for instance, is often bought directly by the in-house legal team, who prefer to deal with lawyers they know, rather than lawyers selected by buyers. Marketing, likewise, often has a preference for particular marketing and advertising agencies, figuring that the cheapest agency may not be the best or most creative. Ditto for expenditures on maintenance, facilities management, janitorial services and consulting firms.

Coding and classification is another problem. Product designers and engineers have a tendency to describe the same thing in multiple ways. To an analytics tool, "Bolt, steel, 8mm diameter" is not intuitively the same as "Steel bolt, 8mm dia" or "Bolt, 8mm dia, steel." Likewise, the same item may be represented by several product codes, depending on where it is used. Such discrepancies are like petri dishes for dirty data that inhibits insight.

"What underpins effective procurement analytics is a clean dataset," says Alun Morris, a senior e-sourcing consultant at Wax Digital, a global e-procurement provider based in Cheshire, U.K. "It's all about cleansing data to a standard, cross-referencable taxonomy, whatever that taxonomy may be."

At Tata Steel, for instance, a global rollout of procurement analytics based around SAP Business Intelligence found anomalies such as an enormous over-supply of crane wheels, intended as spare parts for the overhead gantry cranes at the company's steel mill at Port Talbot. The wheels had been ordered under different part numbers, it turned out, and by different ordering systems.

Their collective value? A million dollars, reports Nicholas Reeks, then director of procurement development at Tata Steel Group, and now a director within the IT function, responsible for delivering analytics to sales, marketing and procurement.

"We just kept reordering—until the business intelligence application showed us that we didn't need to," says Reeks.

Mergers and acquisitions pose another challenge. Here, GEC-Marconi, a British-based internal defense and telecommunications company, which was an early adopter of procurement analytics, is something of a poster child. Possessing no fewer than 168 separate materials requirement planning and procurement systems across its sprawling empire, the company routinely found itself buying the same electronic component from multiple suppliers under multiple part numbers.

While 168 separate systems may be something of an extreme, even two or three ERP or procurement systems can lead to situations where enterprises unknowingly spread spend over multiple suppliers, failing to grasp the opportunity to consolidate spend onto one product code and one supplier.

Use Cases

That said, procurement analytics is about much more than spend consolidation, and applying leverage on suppliers to reduce prices. Proponents of procurement analytics point to three separate areas where better insights into procurement practice can illuminate ways to achieve lower prices, better discounts, better payment terms—or some combination of all of them.

Use case No. 1: How *well* do we buy? Purchasing doesn't take place in isolation. Underpinning vast numbers of transactions are price agreements, contracts, internal guidelines and service standards.

But how well do actual purchases correspond to these supposed norms? Is the organization meeting its goals in terms of consolidating around individual preferred products and vendors? Are employees buying from preferred vendors—or is "maverick procurement" rife? How well do achieved prices correspond to the standard costs built into costing models for budgeting and profit estimation purposes? How long is the procure-to-pay cycle—by category, vendor, and business unit?

In short, through a combination of aggregating individual transactions and trawling through individual purchases comparing actual buys with contracted terms and conditions, procurement analytics applications shine an uncompromising light on non-complaint behavior.

And the opportunities are self-evident: a greater degree of control over the procurement process, and a closer match between negotiated contracts, standard cost assumptions, and actual expenditure.

Use case No. 2: *What* do we buy? Armed with the right information, there's a lot that a savvy buyer can do to reduce costs. In terms of conducting dialogues with suppliers, for instance, there's often scope for consolidating volumes of similar materials or services onto fewer suppliers. Or bundling together different items into 'packages' of materials or services, for which suppliers offer prices as a whole.

Internally, there are also dialogues to be had. The specifications and grades of purchased materials can be examined for opportunities to purchase lower-specification items which will still be fit for purpose. It's also usually worth checking to see if there's maverick spending taking place, where individuals within the organization are placing orders on non-approved (and more expensive) suppliers.

The challenge? Getting the right information to inform those dialogues—which is where procurement analytics comes in. But without basic data on what is bought, from which suppliers, at what prices, and on what terms, it's difficult to get beyond first base.

"You have to go back to the basics," sums up Jeff Nielsen, a 30-year procurement veteran with a stint as CIO of a hospital in San Francisco. Nielsen now works as a procurement suite service manager with UNIT4 (formerly Coda), a software company based in Harrogate, U.K. "You start with a very fundamental question: Are you getting value for money from what you're buying? And from that, everything stems—what are you buying, who are you buying it from, and what are you paying?"

Use case No. 3: How *well* do our suppliers perform? Sourcing exercises—and the procurement contracts which stem from them—are complex things. They stipulate prices to be paid, quantities to be bought, expected levels of quality, invoicing and payment terms, discount levels, volume-based price breaks and a wealth of other stipulations to which suppliers should adhere.

But when it comes time to execute these contracts, do the suppliers in fact adhere to them? And if not, is that non-adherence costing money? Are discount levels not being applied, or volume-based price breaks being ignored? Do invoices contain an inappropriate level of errors? Do suppliers routinely deliver late, or ship only partial quantities?

Yet again, without procurement analytics, it's difficult to build up a picture of supplier performance.

And performance can cover more than simply the mechanics of buying. Increasingly, companies want to uncover the environmental impact of their supply chains, leading to specialist environmental-centric reporting products, such as Ecodesk.

"We are increasingly being asked about the environmental credentials of our products," Matt Wilson, supply chain sustainability leader at pharmaceutical manufacturer GlaxoSmithKline. "The challenge is working with procurement and our suppliers to help them understand the role they play in our value chain environmental impact. Glaxo has chosen to report its carbon, water and waste emissions openly via Ecodesk, and we are asking our suppliers to do the same."

Application Options

Stated simply, out-of-the-box ERP is becoming better at offering basic procurement intelligence. Analyzing spend according to an individual vendor, for instance, won't be a problem. Spend by budget-holder, too, is routine. But spend by budget-holder and vendor? And spend by budget-holder and vendor at item level? At some point, ERP gives way to the need for something more substantial—a need that is further fueled by the complications when businesses have multiple ERP systems, or multiple instances of a single ERP system.

For pure spend analysis, businesses typically prefer a dedicated spend analytics package, sourced from one of a number of specialist suppliers. On-premise or cloud-based, these are often sold with the promise of delivering results more quickly than could be possible with a "full strength" business intelligence solution.

That said, the difference is a question of labeling, agree most experts.

"Spend analysis is simply a flavor of business intelligence," says Wax Digital's Morris. "A procurement-centric flavor, to be sure, but a flavor nonetheless."

And spend analytics, in its purest form, is precisely that—while business intelligence software packages can include within their analyses elements of data sitting well outside traditional spend analysis systems, such as supplier performance data.

"Go beyond simple spend data, and you can capture supplier metrics such as supplier performance metrics—delivery 'on-time and in full' figures, invoice accuracy, contract performance, product quality data and so on—and consequently make better sourcing decisions," says Morris.

In the end, suggests Tata Steel's Reeks, the ultimate decision rests on the scale of the procurement analytics challenge faced, in terms of data volumes, data sources, and data cleanliness.

"Scaling up, the data challenges increase," he points out. "There are questions such as: What are the most effective structures for the data? How do we cleanse the data? What visualization tools will most help to understand what it's telling us?"

But the prize is worth it, says North Rizza. "Look at the very best businesses, and you see procurement analytics delivering genuine procurement intelligence—identifying where the supply base needs to go in order to support the business, and adding value to the basic sourcing decision."

Malcolm Wheatley, a freelance writer and contributing editor at *Data Informed*, is old enough to remember analyzing punched card datasets in batch mode, using SPSS on mainframes. He lives in Devon, England, and can be reached at editor@malcolmwheatley.co.uk.